formed after medium-grade metamorphic conditions at ~415 °C. A weakly constrained Cretaceous age (95 and 105±25 Ma) obtained from white mica within talc-chlorite schists is related to the westward obduction of the Vardar ophiolites over the Adria continental margin. Data reported in this study clearly suggest that there is no essential difference in the emplacement age of the Dinaric and West Vardar ophiolite belts, supporting the interpretation involving a single Mesozoic ocean in the Balkan sector.

Tectonometamorphic record in the cover sequences of the western Tauern Window, Eastern Alps

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The Tauern Window in the Eastern Alps represent a tectonic window within Austroalpine crystalline nappes. The window is formed by the Venediger (Zentralgneiss) nappe system forming large scale antiformal dome structure with preserved Mesozoic cover sequences. This system is overlain by the Subpenninic nappes (namely Modereck and Wolfendorn nappe and Eclogite zone) distinguished from the rest of the nappes by discrete deformation record. The Subpenninic nappes are overlain by the Penninic nappes represented by the Glockner nappe, Reckner Ophiolitic Complex and Matrei zone.

In the studied area, the Venediger duplex is composed of nappes of late Variscan/Permian Tux Gneiss and Zillertal Gneiss with its post-Variscan (Permo-Carboniferous and Mesozoic) cover sequences (VESELÁ et al., 2011). The Subpenninic nappes in the hanging wall are represented by the Modereck and Wolfendorn nappes which are overlain by the Glockner nappe being part of the Penninic units (SCHMID et al., 2013). The nappes alltogether were previously named as Lower Schieferhülle, Upper Schieferhülle and their P-T conditions of up to blueschist facies were described by SELVERSTONE (1988, 1993).

Our detailed structural and petrological study focused mainly on the cover sequences represented by the post-Variscan cover and Subpenninic nappes and their tectono-metamorphic evolution with respect to the Central gneiss complexes.

The cover sequences consist mainly of schists, amphibolites and quartzites and they show dominant NW-dipping fabric in the northern and central parts of studied area and S-dipping fabric in the western part. The observed stretching lineation plunge to the W-SW. This dominant fabric is subsequently folded by open to tight folds with steep E-W trending axial planes and axes gently plunging to the W. The rocks were later affected by cleavage showing dip-slip kinematics with lineations perpendicular to fold axes.

The overlying Glockner nappe (former Upper Schieferhülle) is composed of deformed greenschists and marbles, which are together folded by large-scale open folds with NW trending fold axes and lineations and steep NW dipping cleavage in fold planes.

The metamorphic overprint observed in the cover sequences is characterized by occurence of garnet. These garnets show decrease in spessartine and sometimes also grossular component, while almandine and pyrope increase towards the rim. The core to rim increase in XMg documents the overall prograde growth of these garnets. An attempt is made to characterize this prograde evolution of a garnet by means of thermodynamic modelling.

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Mobility Within the Subduction Channel: Correlation of P-T-D-t Stages Amongst Tectonic Fragments

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Numerical models of subduction channels indicate that tectonic mixing may be an important process. Opinions diverge with regards to possible origins of fragments, amplitudes of internal mobility, and temporal scales of such mixing processes. Recent work in the Sesia Zone of the Western Alps shows that the HP-evolution was substantially more long-lived and complex than previ¬ously established (e.g. RUBATTO et al., 2011). Significantly different HP-stages have been identified in different slices of the Eclogitic Micaschists Complex (EMC; REGIS, 2012), providing evidence of differential movements of HP-fragments, with subduction- and exhumation-related stages being recorded. The size, geometry, and ultimate provenance of fragments are in the focus of our present research.

We report on methods refined to relate petrochronology to structural data. Detailed analysis of local phase equilibria using X-ray images (XMapTools software) yields local P-T equilibrium conditions; these are combined with in situ U-Th-Pb dating for growth zones in allanite and zircon. Careful microstructural details (e.g. on deformation fabrics, mineral inclusions) and REE-distribution data are used to document an integrated HP-record for single samples. Provided that corresponding time intervals were recorded in several tectonic units, it appears thus possible to correlate HP-stages and deformation.

Results are shown for HP-fragments from several tectonic units in the internal Western Alps, with examples ranging from the eastern parts of the Sesia Zone right across to the Austroalpine klippen units now resting atop Piemonte-Liguria oceanic units:

- In eastern parts of the EMC (Mombarone area) HP-micaschist equilibrated at 1.9-2.0 GPa and 540-550 °C contains allanite dated at 85.8±1.0 Ma; zircon shows rims at ~75 Ma and 70-60 Ma, these reflect growth during decompression, but still at pressures >1.4 GPa.
- Further west (Val de Lys), micaschists from the EMC show a HP foliation (ECL-BLS facies) and weak (GRS facies) retrogression. Several generations of phengite, garnet, glaucophane (±early omphactie) and allanite are distinguished, plus quartz, epidote, chlorite, and titanite (rimming rutile). Growth zones in garnet and allanite correspond to distinct HP stages. Preliminary Th-Pb age data for allanite from in situ LA-ICP-MS analysis show 80-74 Ma for cores and 68-62 Ma for rims. These ages compare well with the two HP stages (HP1: ~75 Ma; HP2: ~65 Ma) REGIS et al. (subm.) found in several samples of the Fondo slice of the Sesia Zone, from which pressure cycling was inferred.
- Leucocratic gneiss from the Glacier-Rafray klippe shows assemblages with amphibole-phengite-epidote-plagioclase-titanite-quartz. Complex growth zoning in phengite allows us to establish a relative, but detailed P-T path. Replacement of phengite by chlorite adds late-stage information. When combined with published P-T data an absolute P-T path can be constructed. Dating of the HP-stage(s) is underway.

The analysis of the fossil continental margin between the Sesia Zone, the Piemonte Zone and the external klippen may have significant implications. Several stages and scenarios for the evolution of this margin need to be reconsidered, from pre-collisional rifting, formation of